```
=> fil reg
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DICTIONARY FILE UPDATES:   10 OCT 2005  HIGHEST RN 864908-12-3

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*******************************************************************
*                                                                 *
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* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005.  A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*                                                                 *
*******************************************************************

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FILE COVERS 1907 - 11 Oct 2005  VOL 143 ISS 16
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FILE LAST UPDATED: 10 Oct 2005 (20051010/ED)

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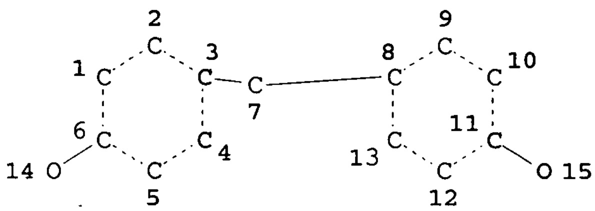
=> d que l12
L1 SCR 2043
L2 STR



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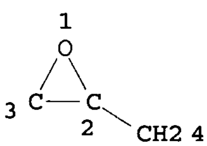
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RSPEC I
NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
L3 STR



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DEFAULT MLEVEL IS ATOM
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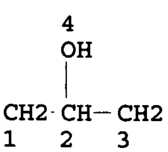
GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE
L4 STR



NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

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GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS    4

STEREO ATTRIBUTES: NONE
L5                STR

H2N— CH2·CH
  1    2   3

NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS    3

STEREO ATTRIBUTES: NONE
L6          2761 SEA FILE=REGISTRY SSS FUL L1 AND L2 AND (L3 OR L4) AND
                 L5
L7          3410 SEA FILE=HCAPLUS L6
L10           71 SEA FILE=HCAPLUS L7 AND (FOLIAT? OR EXFOLIAT? OR
                 INTERCALAT? OR EXPAND(2A)LAYER?)
L11          162 SEA FILE=HCAPLUS L7 AND (?SILICATE? OR ?CLAY?)
L12           51 SEA FILE=HCAPLUS L10 AND L11


=> d l12 bib abs ind hitstr 1 4-7 9-11 17 19 20 29 35 38
```

L12 ANSWER 1 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:396027 HCAPLUS

TI Influence of the Epoxy Structure on the Physical Properties of Epoxy Resin Nanocomposites

AU McIntyre, S.; Kaltzakorta, I.; Liggat, J. J.; Pethrick, R. A.; Rhoney, I.

CS Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow, G1 1XL, UK

SO Industrial & Engineering Chemistry Research ACS ASAP
CODEN: IECRED; ISSN: 0888-5885

PB American Chemical Society

DT Journal

LA English

AB The prepn. and phys. properties of a series of nanocomposites based on dispersions of Montmorillonite **clays** in thermoset epoxy resins are reported. The effects of the variation of the concn. of the **clay** and the influence of a change of the functionality of the epoxy compds. and the amine curing agent are reported. The effects of the method of dispersion of the **clay** are studied, and it was found that ultrasound provides an effective aid to dispersion of the **clay** platelets. In general, the addn. of **clay** platelets leads to an increase in the glass-rubber transition, but in the case of a highly cross-linked system, the reverse effect was obsd. The effects obsd. are discussed in the context of the way in which the chem. structure

of the monomers influence the dispersion process and the structure of the final resin system.

CC 37-5 (Plastics Manufacture and Processing)

ST **clay** epoxy resin nanocomposite dynamic mech thermal property hardener

IT Polysulfones
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(epoxy-polyamine-; influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT Polyamines
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(epoxy-polysulfone-; influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT Polysulfones
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(epoxy; influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT **Exfoliation**
Glass transition temperature
Intercalation
Nanocomposites
Sonication
Storage modulus
Thermal stability
Viscosity
(influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT Epoxy resins
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT X-ray diffraction
(of epoxy resin nanocomposites)

IT Epoxy resins
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polyamine-polysulfone-; influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT Epoxy resins
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polysulfone-; influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT Complex modulus
(tan δ; influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT 309295-00-9, Cloisite 30B
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT **38294-69-8P** 40364-42-9P 63804-34-2P,
4,4'-Diaminodiphenylsulfone-tetraglycidyldiaminodiphenylmethane

copolymer 71745-12-5P
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

IT **38294-69-8P**
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(influence of epoxy structure on phys. properties of epoxy resin nanocomposites)

RN 38294-69-8 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with N,N'-bis(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane (9CI) (CA INDEX NAME)

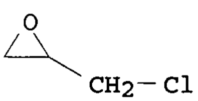
CM 1

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

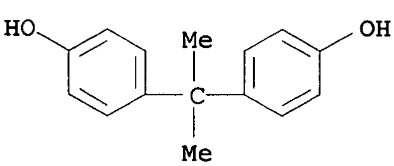
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

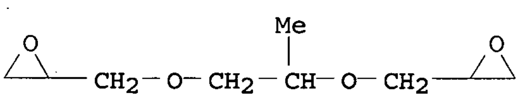
L12 ANSWER 4 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2005:255433 HCAPLUS
DN 142:464370

TI Mechanical properties and failure surface morphology of amine-cured epoxy/**clay** nanocomposites
AU Miyagawa, Hiroaki; Foo, Kit H.; Daniel, Isaac M.; Drzal, Lawrence T.
CS Composite Materials and Structures Center, Michigan State University, East Lansing, MI, 48824-1226, USA
SO Journal of Applied Polymer Science (2005), 96(2), 281-287
CODEN: JAPNAB; ISSN: 0021-8995
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB The tensile and impact properties of amine-cured diglycidyl ether of bisphenol A based nanocomposites reinforced by organo-montmorillonite **clay** nanoplatelets are reported. The sonication processing scheme involved the sonication of the constituent materials in a solvent followed by solvent extn. to generate nanocomposites with homogeneous dispersions of the **organoclay** nanoplatelets. The microstructure of the **clay** nanoplatelets in the nanocomposites was obsd. with TEM, and the **clay** nanoplatelets were well dispersed and were **intercalated** and **exfoliated.** The tensile modulus of epoxy at room temp., which was above the glass-transition temp. of the nanocomposites, increased approx. 50% with the addn. of 10% (6.0 vol%) **clay** nanoplatelets. The reinforcing effect of the **organoclay** nanoplatelets was examd. with respect to the Tandon-Weng and Halpin-Tsai models. The tensile strength was improved only when 2.5% **clay** nanoplatelets were added. The Izod impact strength decreased with increasing **clay** content. The failure surfaces of the nanocomposites were obsd. with environmental SEM and confocal laser scanning microscopy. The roughness of the failure surface was correlated with the tensile strength.
CC 37-5 (Plastics Manufacture and Processing)
ST amine cured epoxy **clay** nanocomposite mech property surface morphol
IT Impact strength
(Izod; of amine-cured epoxy/**clay** nanocomposites)
IT Polyethers, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(epoxy; tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
IT **Clays**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(montmorillonitic; tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
IT Fractography
Surface roughness
Tensile strength
Young's modulus
(of amine-cured epoxy/**clay** nanocomposites)
IT Epoxy resins, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(polyether-; tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
IT Polymer morphology
(surface; of amine-cured epoxy/**clay** nanocomposites)

IT Nanocomposites
(tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
IT Strain
(ultimate; of amine-cured epoxy/**clay** nanocomposites)
IT 309295-00-9, Cloisite 30B
RL: MOA (Modifier or additive use); USES (Uses)
(tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
IT **188925-55-5**, DER 331-DER 732-DEH 24 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
IT **188925-55-5**, DER 331-DER 732-DEH 24 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(tensile and impact properties and failure surface morphol. of amine-cured epoxy/**clay** nanocomposites)
RN 188925-55-5 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with N,N'-bis(2-aminoethyl)-1,2-ethanediamine, (chloromethyl)oxirane and 2,2'-[(1-methyl-1,2-ethanediyl)bis(oxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 16096-30-3
CMF C9 H16 O4



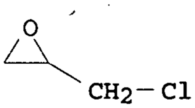
CM 2

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

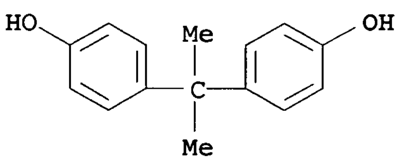
CM 3

CRN 106-89-8
CMF C3 H5 Cl O



CM 4

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 5 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:1062912 HCAPLUS
DN 142:177679
TI Epoxy resin based nanocomposites: 1. Diglycidyl ether of bisphenol A (DGEBA) with triethylenetetramine
AU Brown, Jane; Rhoney, Ian; Pethrick, Richard A.
CS Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow, G1 1XL, UK
SO Polymer International (2004), 53(12), 2130-2137
CODEN: PLYIEI; ISSN: 0959-8103
PB John Wiley & Sons Ltd.
DT Journal
LA English
AB The prepn. and properties of a series of nanocomposite materials obtained using different organically modified montmorillonite **clays** with a simple epoxy resin are reported. Dynamic mech. thermal anal. is used to assess the effect of the incorporation of the **clay** platelets into the matrix of the polymer. In this system, it is obsd. that with the well-dispersed **clay** system the low temp. modulus increases as would be predicted for a filled polymer system. The high temp. modulus increase is consistent with the premise that the polymer is interacting directly with the **clay** platelets. The glass transition temp. increases with the loading of the **clay** in the polymer resins. However, the extent to which enhancement of the phys. properties of the composite occurs depends on the nature of the org. modifier.
CC 37-6 (Plastics Manufacture and Processing)
ST epoxy montmorillonite nanocomposite crosslinking dispersion mech loss bending modulus
IT Diffusion
(diffusion coeff. of montmorillonite-modified epoxy resin)
IT Disperse systems
Exfoliation
Glass transition temperature
Interface
Mechanical loss
Nanocomposites
Young's modulus

(epoxy resin nanocomposites)
IT Crosslinking
(influence of curing temp. on epoxy resin nanocomposites)
IT Flexural modulus
(montmorillonite-modified epoxy resin)
IT **Clays**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(montmorillonitic, fillers; epoxy resin nanocomposites)
IT Epoxy resins, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(triethylene tetramine-crosslinked; epoxy resin nanocomposites)
IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(absorption; montmorillonite-modified epoxy resin)
IT **38294-69-8**, Araldite MY 750-triethylene tetramine copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(epoxy resin nanocomposites)
IT 1318-93-0, Cloisite Na+, uses 252254-69-6, Cloisite 6A
292833-56-8, Cloisite 25A 309295-00-9, Cloisite 30B
RL: MOA (Modifier or additive use); USES (Uses)
(filler; epoxy resin nanocomposites)
IT **38294-69-8**, Araldite MY 750-triethylene tetramine copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(epoxy resin nanocomposites)
RN 38294-69-8 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with
N,N'-bis(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane
(9CI) (CA INDEX NAME)

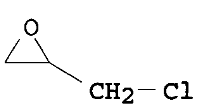
CM 1

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

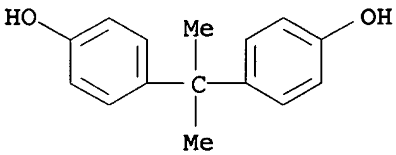
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 6 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:1040618 HCAPLUS
DN 142:135409
TI Amine-cured epoxy/**clay** nanocomposites. I. Processing and chemical characterization
AU Miyagawa, Hiroaki; Rich, Michael J.; Drzal, Lawrence T.
CS Composite Materials and Structures Center, Michigan State University, East Lansing, MI, 48824-1226, USA
SO Journal of Polymer Science, Part B: Polymer Physics (2004), 42(23), 4384-4390
CODEN: JPBPEM; ISSN: 0887-6266
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB The processing of nanocomposite materials composed of amine-cured diglycidyl ether of bisphenol A (DGEBA) reinforced with organomontmorillonite **clay** is studied. A novel sample prepn. scheme was used to process the modified **clay** in the glassy epoxy network, resulting in nanocomposites where the **clay** was both **exfoliated** and **intercalated** by the epoxy network. The processing scheme involves sonication of the constituent materials in a solvent, followed by solvent extn. to generate a composite with homogeneous dispersions of the **nanoclay.** Fourier-transform IR spectroscopy and Fourier-transform Raman spectroscopy confirmed that the chem. structure of the epoxy network was not affected by the use of solvents in this processing scheme. The glass transition temp., Tg, linearly increased with an increased wt. ratio of the **nanoclay.** The microstructure of **clay** nanoplatelets in the composites was obsd. with transmission electron microscopy, wide-angle x-ray scattering, and small-angle x-ray scattering. The **clay** nanoplatelets were well-dispersed and were **intercalated** as well as **exfoliated.**
CC 37-3 (Plastics Manufacture and Processing)
ST amine cured epoxy resin nanocomposite **clay**; sonication **clay** nanocomposite epoxy resin; montmorillonite nanocomposite amine cured epoxy resin
IT Sonication
(in processing and chem. characterization of amine-cured epoxy resin/**clay** nanocomposites)
IT Glass transition temperature
Nanocomposites
Polymer morphology
Thermal stability
(processing and chem. characterization of amine-cured epoxy

resin/**clay** nanocomposites)

IT Epoxy resins, properties
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(processing and chem. characterization of amine-cured epoxy resin/**clay** nanocomposites)

IT Complex modulus
(tan δ; processing and chem. characterization of amine-cured epoxy resin/**clay** nanocomposites)

IT 1318-93-0D, Montmorillonite, bis(2-hydroxyethyl)methyl hydrogenated tallow ammonium-modified 309295-00-9, Cloisite 30B
RL: MOA (Modifier or additive use); USES (Uses)
(epoxy resin nanocomposites; processing and chem. characterization of amine-cured epoxy resin/**clay** nanocomposites)

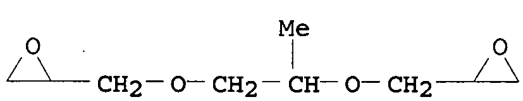
IT **188925-55-5**, Der 331-Der 732-Deh 24 copolymer
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**organoclay** nanocomposite; processing and chem. characterization of amine-cured epoxy resin/**clay** nanocomposites)

IT **188925-55-5**, Der 331-Der 732-Deh 24 copolymer
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(**organoclay** nanocomposite; processing and chem. characterization of amine-cured epoxy resin/**clay** nanocomposites)

RN 188925-55-5 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with N,N'-bis(2-aminoethyl)-1,2-ethanediamine, (chloromethyl)oxirane and 2,2'-[(1-methyl-1,2-ethanediyl)bis(oxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 16096-30-3
CMF C9 H16 O4



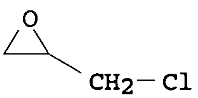
CM 2

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

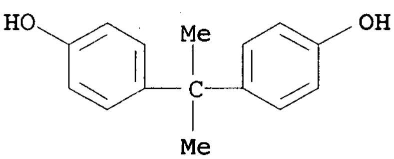
CM 3

CRN 106-89-8
CMF C3 H5 Cl O



CM 4

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 7 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:996673 HCAPLUS
DN 142:114993
TI Room temperature processing of epoxy-**clay** nanocomposites
AU Velmurugan, R.; Mohan, T. P.
CS Composites Technology Centre, Indian Institute of Technology Madras, Chennai, 600 036, India
SO Journal of Materials Science (2004), 39(24), 7333-7339
CODEN: JMTSAS; ISSN: 0022-2461
PB Kluwer Academic Publishers
DT Journal
LA English
AB Polymer/**Clay** nanocomposites consisting of an epoxy matrix filled with nanolayered **silicate clay** particles have been investigated. Recent and ongoing research has shown that dramatic enhancements can be achieved in mech. and thermal properties by adding a small vol. percent of **clays.** In the present work nanocomposites are processed by mech. mixing of epoxy with **organoclays** and unmodified **clays** using a high speed elec. shear mixer at room temp. The addn. of different **organoclay** wt% [1-3, 5 and 10] indicates good enhancement in hardness, dynamic mech. properties, and also the mol. mobility of the polymer is reduced by the presence of the **silicate** layers, which in turn causes large stiffness improvements. X-ray diffraction (XRD) results show the **intercalation/exfoliation** of **clays** in

the epoxy matrix. The influence of **organoclay** restricts
the wt. loss at varying temps. Expts. show improved elastic modulus
for both modified and unmodified **clays.**

CC 37-6 (Plastics Manufacture and Processing)

ST epoxy resin organo montmorillonite bentonite nanocomposite

IT Hardness (mechanical)
Mechanical loss
Storage modulus
Stress-strain relationship
Thermal stability
Young's modulus
(room temp. processing and properties of epoxy resin-**clay**
nanocomposites)

IT Epoxy resins, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(room temp. processing and properties of epoxy resin-**clay**
nanocomposites)

IT Bentonite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(sodian; room temp. processing and properties of epoxy resin-
clay nanocomposites)

IT 1318-93-0D, Montmorillonite, aminoalkylammonium-**intercalated**
679425-48-0, Garamite 1958
RL: MOA (Modifier or additive use); USES (Uses)
(room temp. processing and properties of epoxy resin-**clay**
nanocomposites)

IT **38294-69-8**, Araldite LY 556-triethylenetetramine copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(room temp. processing and properties of epoxy resin-**clay**
nanocomposites)

IT **38294-69-8**, Araldite LY 556-triethylenetetramine copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(room temp. processing and properties of epoxy resin-**clay**
nanocomposites)

RN 38294-69-8 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with
N,N'-bis(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane
(9CI) (CA INDEX NAME)

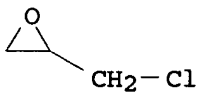
CM 1

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

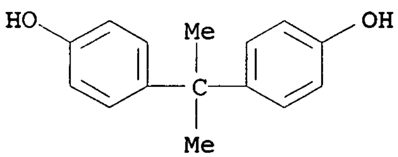
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 9 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:683099 HCAPLUS
DN 141:350744
TI Epoxy-Layered **Silicate** Nanocomposites and Their Gas Permeation Properties
AU Osman, Maged A.; Mittal, Vikas; Morbidelli, Massimo; Suter, Ulrich W.
CS Department of Materials, Institute of Polymers, ETH Zurich, Zurich, CH-8093, Switz.
SO Macromolecules (2004), 37(19), 7250-7257
CODEN: MAMOBX; ISSN: 0024-9297
PB American Chemical Society
DT Journal
LA English
AB Epoxy-OM (organo-montmorillonite) nanocomposites have been synthesized, and their permeability to oxygen and water vapor has been measured. The chem. structure of the org. monolayer ionically bonded to the montmorillonite surface has been varied, and its influence on the swelling, **intercalation**, and **exfoliation** behavior of the OM has been studied. **Exfoliated aluminosilicate** layers build a barrier for the permeating gas mols., while the polymer **intercalated** tactoids do not contribute much to the permeation barrier performance. The gas permeation through the composites was correlated to the vol. fraction of the impermeable inorg. part of the OM. The incorporation of small vol. fractions of the platelike nanoparticles in the polymer matrix decreased its permeability coeff. when the interface between the two heterogeneous phases was properly designed. Long alkyl chains enhanced the polymer **intercalation** but increased the permeability coeff. probably due to phase sepn. at the interface between the polymer and the inclusions. Matching the surface energy of the OM with that of the matrix as well as tethering polymer mols. to the **silicate**

layers surface enhanced the **exfoliation** and decreased the permeation coeff. The **exfoliation** process is governed by interplay of entropic and energetic factors. A macroscopic vol. av. of the aspect ratio of montmorillonite platelets was deducted from the relative permeability of the nanocomposites by comparing the measured values to numerical predictions of gas permeation through composites of misaligned disk-shaped inclusions. The permeability coeff. of the epoxy matrix was reduced to one-fourth at 5 vol % Bz1OH loading, and the redn. was attributed to the tortuous pathway the gas mols. have to cover during their random walk to penetrate the composite. The transmission rate of water vapor through the composites is more influenced by the permeant-composite interactions and hence the hydrophobicity of the monolayer covering the inclusions surface. At 5 vol % BzC16 loading, the relative vapor transmission rate was reduced to half.

CC 37-5 (Plastics Manufacture and Processing)

ST epoxy **organoclay** nanocomposite microstructure permeability

IT Quaternary ammonium compounds, preparation
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(chlorides; effect on epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT **Exfoliation**
Hydrophobicity
Intercalation
Nanocomposites
Water vapor
(epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT Epoxy resins, preparation
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT Permeability
(gas; epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT Microstructure
(of epoxy-layered **silicate** nanocomposites)

IT Crystal structure
Density
(of **organoclays** and epoxy-layered **silicate** nanocomposites)

IT Mass transfer
(of water vapor through epoxy-layered **silicate** nanocomposites)

IT 107-64-2DP, reaction products with montmorillonite 122-18-9DP, Benzyldimethylhexadecylammonium chloride, reaction products with montmorillonite 1318-93-0DP, Cloisite Na+, ammonium-modified 7006-60-2DP, reaction products with montmorillonite 50602-59-0DP, reaction products with montmorillonite 50985-33-6DP, reaction products with montmorillonite 112778-23-1DP, reaction products with montmorillonite
RL: MOA (Modifier or additive use); PEP (Physical, engineering or

chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT **59374-15-1P**, Bisphenol A diglycidyl ether-tetraethylenepentamine copolymer
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT 7732-18-5, Water, processes 7782-44-7, Oxygen, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(epoxy-layered **silicate** nanocomposites and their gas permeation properties)

IT 100-44-7, Benzyl chloride, reactions 101-98-4, N-Benzyl-N-methylethanolamine 102-71-6, Triethanolamine, reactions 102-79-4, N-Butyldiethanolamine 102-81-8, 2-(Dibutylamino)ethanol 112-89-0, 1-Bromooctadecane
RL: RCT (Reactant); RACT (Reactant or reagent)
(in prepn. of ammonium salts for epoxy-**organoclay** nanocomposites)

IT 7006-60-2P, Benzyltriethanolammonium chloride 50602-59-0P, Benzyldibutyl(2-hydroxyethyl)ammonium chloride 50985-33-6P, Benzylbis(2-hydroxyethyl)butylammonium chloride 112778-23-1P, Benzyl(2-hydroxyethyl)methyloctadecylammonium chloride
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. of ammonium salts for epoxy-**organoclay** nanocomposites)

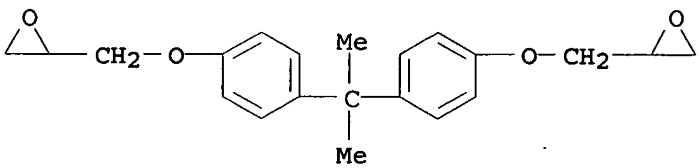
IT **59374-15-1P**, Bisphenol A diglycidyl ether-tetraethylenepentamine copolymer
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(epoxy-layered **silicate** nanocomposites and their gas permeation properties)

RN 59374-15-1 HCAPLUS

CN 1,2-Ethanediamine, N-(2-aminoethyl)-N'-[2-[(2-aminoethyl)amino]ethyl]-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 1675-54-3
CMF C21 H24 O4



CM 2

CRN 112-57-2
CMF C8 H23 N5

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

RE.CNT 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 10 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:596972 HCAPLUS
DN 141:411892
TI Solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers
AU Liu, Zengshe; Erhan, Sevim Z.; Calvert, Paul D.
CS Food and Industrial Oil Research, NCAUR, ARS, USDA, Peoria, IL, 61604, USA
SO Journal of the American Oil Chemists' Society (2004), 81(6), 605-610
CODEN: JAOCA7; ISSN: 0003-021X
PB AOCS Press
DT Journal
LA English
AB Soybean oil/epoxy-based composites were prepd. by an extrusion freeform fabrication method. These composites were reinforced with a combination of organically modified **clay** and fibers. The **intercalated** behavior of the epoxy resin in the presence of organo-modified **clay** was investigated by X-ray diffraction and transmission electron microscopy. The mixt. of epoxidized soybean oil and EPON 828 resin was modified with a gelling agent to solidify the materials until curing occurred. The flexural modulus reached 4.86 GPa with glass fiber reinforcement at 50.6 wt% loading. It was shown that the fiber orientation followed the direction of motion of the writing head that deposited the resins and had an influence on the properties of the composite. The composites cured by curing agent Jeffamine EDR-148 were found to have lower mech. properties than those cured with triethylenetetramine, diethylenetriamine, and polyethylenimine. In addn., the effects of **clay** loading and fiber loading on mech. properties of the composites were studied and reported.
CC 38-3 (Plastics Fabrication and Uses)
ST solid freeform fabrication soybean oil composite reinforced **clay** fiber
IT Soybean oil

RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(epoxidized; solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT Bending strength
Crosslinking agents
Flexural modulus
Fracture surface morphology
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT Carbon fibers, uses
Glass fibers, uses
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT Epoxy resins, uses
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT 454480-46-7, Fillex 17AF1
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(Fillex 17-AF1; solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT 307317-55-1, Wollastonite
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT **31326-29-1**, Diethylenetriamine-EPON 828 copolymer
38294-69-8, Triethylenetetramine-EPON 828 copolymer
135927-34-3, Jeffamine EDR-148-EPON 828 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT 309295-00-9, Cloisite 30B
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

IT **31326-29-1**, Diethylenetriamine-EPON 828 copolymer
38294-69-8, Triethylenetetramine-EPON 828 copolymer
135927-34-3, Jeffamine EDR-148-EPON 828 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(solid freeform fabrication of soybean oil-based composites reinforced with **clay** and fibers)

RN 31326-29-1 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with N-(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane (9CI) (CA INDEX NAME)

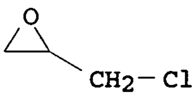
CM 1

CRN 111-40-0
CMF C4 H13 N3

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

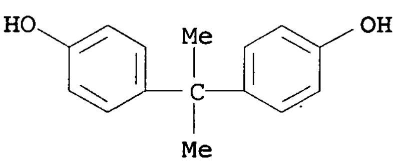
CM 2

CRN 106-89-8.
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RN 38294-69-8 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with
N,N'-bis(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane
(9CI) (CA INDEX NAME)

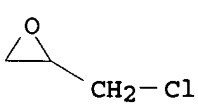
CM 1

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

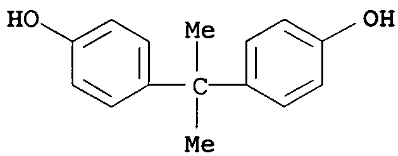
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RN 135927-34-3 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and 2,2'-[1,2-ethanediylbis(oxy)]bis[ethanamin e] (9CI) (CA INDEX NAME)

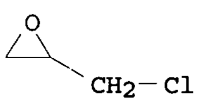
CM 1

CRN 929-59-9
CMF C6 H16 N2 O2

$H_2N-CH_2-CH_2-O-CH_2-CH_2-O-CH_2-CH_2-NH_2$

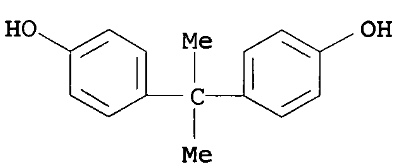
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 11 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:547496 HCAPLUS

DN 141:226266
TI The aspect ratio and gas permeation in polymer-layered
silicate nanocomposites
AU Osman, Maged A.; Mittal, Vikas; Lusti, Hans Rudolf
CS Department of Materials, Institute of Polymers, ETH, Zurich,
CH-8092, Switz.
SO Macromolecular Rapid Communications (2004), 25(12), 1145-1149
CODEN: MRCOE3; ISSN: 1022-1336
PB Wiley-VCH Verlag GmbH & Co. KGaA
DT Journal
LA English
AB Organophilized montmorillonite-epoxy and - polyurethane nanocomposites, useful for packaging applications, were prepd. and their oxygen permeability was measured. The composite morphol. was mixed, **exfoliated** and **intercalated**, as shown by wide-angle X-ray diffraction (WAXRD) and transmission electron microscopy (TEM). The gas-barrier performance of the polyurethane composites was better than that of the epoxy composites due to more **exfoliation.** The av. aspect ratio of the montmorillonite platelets in the nanocomposites could be estd. from the redn. in permeability by a numerical finite element approach.
CC 37-5 (Plastics Manufacture and Processing)
ST epoxy polyurethane montmorillonite nanocomposite permeability
IT **Exfoliation**
Intercalation
Nanocomposites
(aspect ratio and gas permeation in polymer-layered
silicate nanocomposites)
IT Polyurethanes, properties
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(aspect ratio and gas permeation in polymer-layered
silicate nanocomposites)
IT Epoxy resins, preparation
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(aspect ratio and gas permeation in polymer-layered
silicate nanocomposites)
IT Simulation and Modeling, physicochemical
(finite-element; aspect ratio and gas permeation in
polymer-layered **silicate** nanocomposites)
IT Permeability
(gas; aspect ratio and gas permeation in polymer-layered
silicate nanocomposites)
IT Crystal structure
(of organophilized montmorillonite and -epoxy or -polyurethane
nanocomposites)
IT Microstructure
(of organophilized montmorillonite-epoxy or -polyurethane
nanocomposites)
IT 1318-93-0D, Montmorillonite, benzyldimethylhexadecylammonium-exchanged 10328-34-4D, Benzyldimethylhexadecylammonium, cation-exchanged products with montmorillonite

RL: MOA (Modifier or additive use); USES (Uses)
(aspect ratio and gas permeation in polymer-layered **silicate** nanocomposites)

IT **59374-15-1P**, Bisphenol A diglycidyl ether-tetraethylenepentamine copolymer
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(aspect ratio and gas permeation in polymer-layered **silicate** nanocomposites)

IT 7782-44-7, Oxygen, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(aspect ratio and gas permeation in polymer-layered **silicate** nanocomposites)

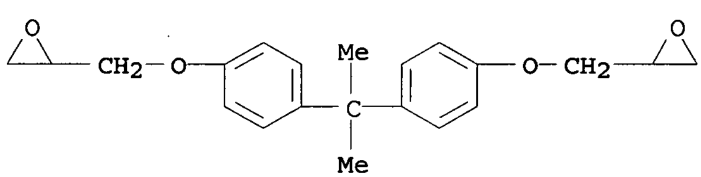
IT **59374-15-1P**, Bisphenol A diglycidyl ether-tetraethylenepentamine copolymer
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(aspect ratio and gas permeation in polymer-layered **silicate** nanocomposites)

RN 59374-15-1 HCAPLUS

CN 1,2-Ethanediamine, N-(2-aminoethyl)-N'-[2-[(2-aminoethyl)amino]ethyl]-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 1675-54-3
CMF C21 H24 O4



CM 2

CRN 112-57-2
CMF C8 H23 N5

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 17 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:683986 HCAPLUS
DN 139:324138
TI Study of the **exfoliation** process of epoxy-**clay** nanocomposites by different curing agents
AU Wang, Qi; Song, Chunfang; Lin, Weiwei
CS Department of Polymer Science and Engineering, Zhejiang University, Hangzhou, 310027, Peop. Rep. China
SO Journal of Applied Polymer Science (2003), 90(2), 511-517
CODEN: JAPNAB; ISSN: 0021-8995
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB Epoxy-**clay** nanocomposites were synthesized using two **organoclays** cured with different chems. at different temps. Interlayer distance of the **clay** layers and curing process were investigated by X-ray diffraction and IR spectra. The **clay** treated with facilitated curing agent, 2,4,6-tris[(dimethylamino)methyl]phenol, can **exfoliate** at all curing conditions, but for the other **clay** treated with low-speed curing agent, p,p'-diaminodiphenylmethane, **exfoliation** of the **clay** layers does not occur. It was found that the relative curing speed between the inter-layer and exter-layer was the most important factor detg. **clay exfoliation. Exfoliated** epoxy-**clay** nanocomposites can be prepd. if the curing speed of the inter-layer is higher than that of the exter-layer, irresp. of the curing agent and temp. used.
CC 37-5 (Plastics Manufacture and Processing)
ST epoxy **organoclay** nanocomposite **exfoliation** curing agent
IT Crosslinking agents
(effect on **exfoliation** process of epoxy-**clay** nanocomposites by different curing agents)
IT Crosslinking
Nanocomposites
(**exfoliation** process of epoxy-**clay** nanocomposites by different curing agents)
IT Epoxy resins, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(**exfoliation** process of epoxy-**clay** nanocomposites by different curing agents)
IT **Exfoliation**
Intercalation
(in epoxy-**clay** nanocomposites by different curing agents)
IT Microstructure
Thermal stability
(of epoxy-**clay** nanocomposites by different curing agents)
IT Crystal structure
(of **organoclays** and epoxy-**clay** nanocomposites by different curing agents)
IT **31326-29-1DP**, Diethylenetriamine-Epon 828 copolymer,

reaction products with **organoclays** 40364-42-9DP,
reaction products with **organoclays 68797-36-4DP**,
reaction products with **organoclays** 106831-79-2DP,
reaction products with **organoclays 613232-67-0DP**
, reaction products with **organoclays**
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(**exfoliation** process of epoxy-**clay**
nanocomposites by different curing agents)

IT 90-72-2DP, 2,4,6-Tris[(dimethylamino)methyl]phenol, reaction
products with sodium montmorillonite, then with epoxy 101-77-9DP,
p,p'-Diaminodiphenylmethane, reaction products with sodium
montmorillonite, then with epoxy 1318-93-0DP, Montmorillonite
((Al1.33-1.67Mg0.33-0.67)(Ca0-1Na0-1)0.33Si4(OH)2O10.xH2O),
sodium-exchanged, reaction products with
tris[(dimethylamino)methyl]phenol or diaminodiphenylmethane, then
with epoxy
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);
PREP (Preparation); RACT (Reactant or reagent)
(**organoclay**; **exfoliation** process of epoxy-
clay nanocomposites by different curing agents)

IT **31326-29-1DP**, Diethylenetriamine-Epon 828 copolymer,
reaction products with **organoclays 68797-36-4DP**,
reaction products with **organoclays 613232-67-0DP**
, reaction products with **organoclays**
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(**exfoliation** process of epoxy-**clay**
nanocomposites by different curing agents)

RN 31326-29-1 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with
N-(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane (9CI)
(CA INDEX NAME)

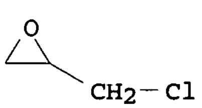
CM 1

CRN 111-40-0
CMF C4 H13 N3

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

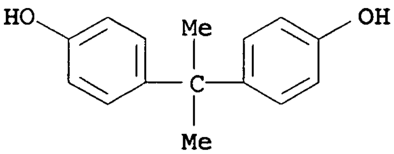
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RN 68797-36-4 HCAPLUS
CN 2-Propenenitrile, polymer with N-(2-aminoethyl)-1,2-ethanediamine, (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 111-40-0
CMF C4 H13 N3

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

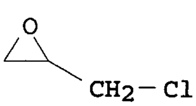
CM 2

CRN 107-13-1
CMF C3 H3 N

$H_2C=CH-C\equiv N$

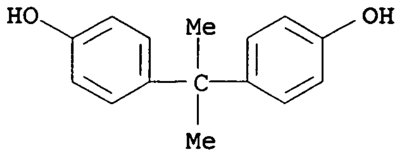
CM 3

CRN 106-89-8
CMF C3 H5 Cl O



CM 4

CRN 80-05-7
CMF C15 H16 O2



RN 613232-67-0 HCAPLUS
CN Thiourea, polymer with N-(2-aminoethyl)-1,2-ethanediamine, (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

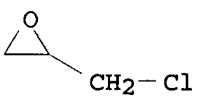
CM 1

CRN 111-40-0
CMF C4 H13 N3

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

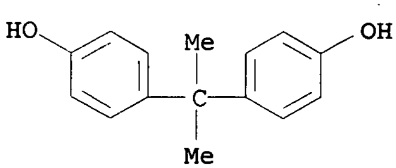
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



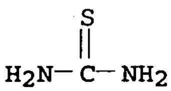
CM 3

CRN 80-05-7
CMF C15 H16 O2



CM 4

CRN 62-56-6
CMF C H4 N2 S



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 19 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:517634 HCAPLUS
DN 140:271588
TI Characterization and modeling of mechanical behavior of polymer/**clay** nanocomposites
AU Luo, Jyi-Jiin; Daniel, Isaac M.
CS Robert R. McCormick School of Engineering and Applied Science, Northwestern University, Evanston, IL, 60208, USA
SO Composites Science and Technology (2003), 63(11), 1607-1616
CODEN: CSTCEH; ISSN: 0266-3538
PB Elsevier Science Ltd.
DT Journal
LA English
AB Polymer/**clay** nanocomposites consisting of epoxy matrix filled with **silicate clay** particles were investigated. These particles consist of 1 nm thick platelets or layers with an aspect ratio in the range of 100-1000. Recent and ongoing research has shown that dramatic enhancements can be achieved in stiffness and thermal properties in these nanocomposites with small amts. of particle concn. The resulting nanocomposite properties are intimately related to the microstructure achieved in processing these materials. The ideal situation of full **exfoliation**, dispersion and orientation is not usually achieved. A more common case is partial **exfoliation** and **intercalation.** The latter is a process whereby the polymer penetrates the interlayer spaces of the **clay** particles, causing an increase in layer spacing (d-spacing). A three-phase model, including the epoxy matrix, the **exfoliated clay** nanolayers and the nanolayer clusters was developed. The region consisting of matrix with **exfoliated clay** nanolayers or platelets was analyzed by assuming near uniform dispersion and random orientation. The properties of **intercalated** clusters of **clay** platelets were calcd. by a rule of mixts. based on a parallel platelet system. The Mori-Tanaka method was applied to calc. the modulus of the nanocomposite as a function of various parameters, including the **exfoliation** ratio, **clay** layer and cluster aspect ratios, d-spacing, intragallery modulus, matrix modulus and matrix Poisson's ratio. With appropriate parameters obtained from expts., model predictions were in good agreement with exptl. results.
CC 37-5 (Plastics Manufacture and Processing)
ST montmorillonite epoxy nanocomposite mech property; morphol montmorillonite epoxy nanocomposite; Youngs modulus montmorillonite epoxy nanocomposite; stress strain modulus montmorillonite epoxy nanocomposite
IT Nanocomposites
Polymer morphology

Stress-strain relationship
Young's modulus
(characterization and modeling of mech. behavior of epoxy resin-montmorillonite nanocomposites)

IT Epoxy resins, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(characterization and modeling of mech. behavior of epoxy resin-montmorillonite nanocomposites)

IT 1318-93-0D, Montmorillonite, bis(hydroxyethyl)methyltallow ammonium-modified 309295-00-9, Cloisite 30B
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(characterization and modeling of mech. behavior of epoxy resin-montmorillonite nanocomposites)

IT **38294-69-8**, DEH 24-DER 331 copolymer 76397-91-6, Araldite GY 6010-Araldite HY 917 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(characterization and modeling of mech. behavior of epoxy resin-montmorillonite nanocomposites)

IT **38294-69-8**, DEH 24-DER 331 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(characterization and modeling of mech. behavior of epoxy resin-montmorillonite nanocomposites)

RN 38294-69-8 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with N,N'-bis(2-aminoethyl)-1,2-ethanediamine and (chloromethyl)oxirane (9CI) (CA INDEX NAME)

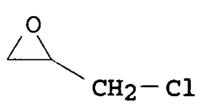
CM 1

CRN 112-24-3
CMF C6 H18 N4

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

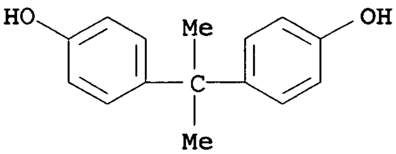
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 20 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:395174 HCAPLUS
DN 139:165323
TI High compatibility of the poly(oxypropylene)amine-**intercalated** montmorillonite for epoxy
AU Lin, Jiang-Jen; Cheng, I-Jein; Chu, Chien-Chia
CS Department of Chemical Engineering, National Chung-Hsing University, Taichung, 402, Taiwan
SO Polymer Journal (Tokyo, Japan) (2003), 35(5), 411-416
CODEN: POLJB8; ISSN: 0032-3896
PB Society of Polymer Science, Japan
DT Journal
LA English
AB The poly(oxypropylene)amine (POP-amine) **intercalated** montmorillonite (MMT) was found to have a high organophilicity and compatibility with epoxy materials. The 2000 g mol-1 mol. wt. POP-amine modified MMT, analyzed to have 63 w% orgs. and 58.0 Å X-ray diffraction (XRD) d-spacing, was compounded with a curing agent (Jeffamine D2000) and an epoxy resin (diglycidyl ether of bisphenol A). With 1-10 w% **organoclay** addns., the cured epoxies exhibited an **exfoliated** characteristic and significant improvements in thermal stability, solvent resistance and mech. properties. The tensile strength (2.8 vs. 0.3 Mpa), flexural modulus (9.6 vs. 3.1 Mpa), and elongation (81.2 vs. 25.3%) were obsd. for the improved epoxy polymer.
CC 37-6 (Plastics Manufacture and Processing)
ST polyoxypropyleneamine **intercalated** montmorillonite compatibility epoxy resin
IT Epoxy resins, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(high compatibility of poly(oxypropylene)amine-**intercalated** montmorillonite for epoxy resins)
IT Elongation at break
Flexural modulus
Tensile strength
Thermal stability
(of epoxy composite contg. poly(oxypropylene)amine-**intercalated** montmorillonite)
IT Absorption
(solvent; by epoxy composite contg. poly(oxypropylene)amine-**intercalated** montmorillonite)
IT 9046-10-0DP, **intercalation** compds. with sodium montmorillonite
RL: MOA (Modifier or additive use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(Jeffamine D400, Jeffamine D2000, and Jeffamine D4000; high compatibility of poly(oxypropylene)amine-**intercalated** montmorillonite for epoxy resins)

IT 1318-93-0DP, Montmorillonite, sodium-exchanged, **intercalation** compds. with amine-terminated polyoxypropylene
RL: MOA (Modifier or additive use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(high compatibility of poly(oxypropylene)amine-**intercalated** montmorillonite for epoxy resins)

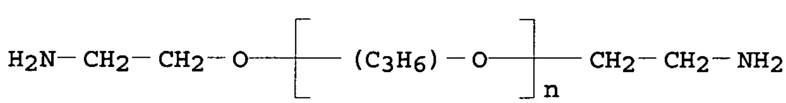
IT **68318-44-5**, Bisphenol A-epichlorohydrin-Jeffamine D2000 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(high compatibility of poly(oxypropylene)amine-**intercalated** montmorillonite for epoxy resins)

IT **68318-44-5**, Bisphenol A-epichlorohydrin-Jeffamine D2000 copolymer
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(high compatibility of poly(oxypropylene)amine-**intercalated** montmorillonite for epoxy resins)

RN 68318-44-5 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)] and (chloromethyl)oxirane (9CI) (CA INDEX NAME)

CM 1

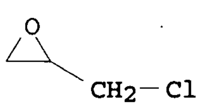
CRN 9046-10-0
CMF (C3 H6 O)n C6 H16 N2 O
CCI IDS, PMS



2 (D1—Me)

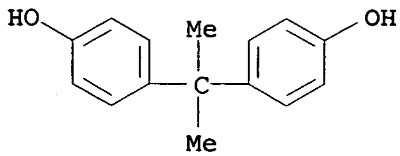
CM 2

CRN 106-89-8
CMF C3 H5 Cl O



CM 3

CRN 80-05-7
CMF C15 H16 O2



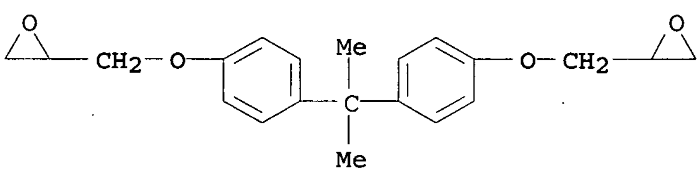
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 29 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:475152 HCAPLUS
DN 135:211718
TI Study on diethylenetriamine cured epoxy resin/montmorillonite nanocomposite
AU Xu, Wei-bing; Bao, Su-ping; Nie, Kang-ming; He, Ping-sheng
CS Department of Polymer Science and Engineering, University of Science and Technology of China, Hefei, 230026, Peop. Rep. China
SO Yingyong Huaxue (2001), 18(6), 469-472
CODEN: YIHUED; ISSN: 1000-0518
PB Yingyong Huaxue Bianji Weiyuanhui
DT Journal
LA Chinese
AB The organophilic montmorillonite (I) with increased interlayer spacings were prepd. from hydrophilic **clay** by cation exchange with trimethylcetylammonium bromide. The epoxy resin/diethylenetriamine/I nanocomposites were prepd. by casting and curing processes and the **intercalation** behavior of epoxy resin in the organophilic I was investigated by XRD and DMTA methods. The nanocomposites obtained were **intercalated** upon curing with diethylenetriamine and the **intercalation** was independent of the curing conditions. The glass transition temp. from DMTA anal. revealed the glass transition temp. of the extragallery cured epoxy resin and was in relation to the curing temps. Addn. of organophilic I led to the disappearance of the α' peak of loss tangent of the nanocomposites.
CC 37-6 (Plastics Manufacture and Processing)
ST diethylenetriamine cured epoxy resin montmorillonite nanocomposite prepn thermal mech
IT Glass transition temperature
Mechanical loss
Nanocomposites
(prepn. and thermal and mech. properties of diethylenetriamine-cured epoxy resin/montmorillonite nanocomposite)
IT 57-09-0, Trimethylcetyl ammonium bromide
RL: NUU (Other use, unclassified); USES (Uses)
(in prepn. of montmorillonite nanocomposite)
IT 1318-93-0, Montmorillonite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(prepn. and thermal and mech. properties of diethylenetriamine-cured epoxy resin/montmorillonite nanocomposite)
IT **26402-42-6P**

RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(prepn. and thermal and mech. properties of diethylenetriamine-
cured epoxy resin/montmorillonite nanocomposite)
IT **26402-42-6P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(prepn. and thermal and mech. properties of diethylenetriamine-
cured epoxy resin/montmorillonite nanocomposite)
RN 26402-42-6 HCAPLUS
CN 1,2-Ethanediamine, N-(2-aminoethyl)-, polymer with
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane
] (9CI) (CA INDEX NAME)

CM 1

CRN 1675-54-3
CMF C21 H24 O4



CM 2

CRN 111-40-0
CMF C4 H13 N3

$H_2N-CH_2-CH_2-NH-CH_2-CH_2-NH_2$

L12 ANSWER 35 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:592777 HCAPLUS
DN 133:179001
TI Curable coating compositions containing high aspect ratio
clays
IN Kaylo, Alan J.; Karabin, Richard F.; Lan, Tie; Sandala, Michael G.
PA PPG Industries Ohio, Inc., USA
SO PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000049082	A1	20000824	WO 2000-US4465	200002

22

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,
CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN,
YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6410635 B1 20020625 US 1999-255207 19990222

PRAI US 1999-255207 A 19990222

AB Provided are curable coating compns. comprised of any of a variety of film-forming polymers contg. reactive functional groups, a curing agent contg. functional groups which are reactive with the functional groups of the polymer, and an **exfoliated silicate** material derived from a layered **silicate** which has been **exfoliated** with a polymer which is compatible with both the film-forming polymer and the curing agent. The inclusion of the **exfoliated silicate** material enhances coating properties such as adhesion, appearance, crater resistance, and rheol. control. Thus, a compn. comprising cationic epoxy resin with blocked polyisocyanates (44.7% solid) 694.8, aq. dispersion contg. 88% lactic acid aq. soln. 106.37, PGV 5 108.79, water 2828.43, and bisphenol A-DER 732-Epon 880-Jeffamine D 400 copolymer (prepn. given) 1100.00 g, 133.6, Butyl Carbitol formal 11.0, microgel 41.3, catalyst 13.3, and water 1596.8 parts was electrodeposited onto a cold rolled steel and thermally cured to give a cured film having improved crater count and oil spot resistance.

IC ICM C08K009-08
ICS C09D101-00; C09D101-00; C09D101-00; C09D101-02

CC 42-9 (Coatings, Inks, and Related Products)

ST coating compn epoxy resin **clay; exfoliated silicate** epoxy resin coating compn

IT Aminoplasts
Phenolic resins, uses
Polyanhydrides
RL: MOA (Modifier or additive use); USES (Uses)
(crosslinking agents; curable coating compns. contg. high aspect ratio **clays**)

IT Coating materials
Crosslinking agents
(curable coating compns. contg. high aspect ratio **clays**
)

IT Epoxy resins, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(curable coating compns. contg. high aspect ratio **clays**
)

IT Polyesters, miscellaneous
Polyethers, miscellaneous
Polysiloxanes, miscellaneous

Polyurethanes, miscellaneous
RL: MSC (Miscellaneous)
(layered **silicates exfoliated** with; curable coating compns. contg. high aspect ratio **clays**)

IT **Silicates**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(layered; curable coating compns. contg. high aspect ratio **clays**)

IT **Clays**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(montmorillonitic; curable coating compns. contg. high aspect ratio **clays**)

IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polycarboxylic, crosslinking agents; curable coating compns. contg. high aspect ratio **clays**)

IT 12597-69-2, Steel, miscellaneous
RL: MSC (Miscellaneous)
(cold rolled, coating substrate; curable coating compns. contg. high aspect ratio **clays**)

IT **282735-62-0P**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(curable coating compns. contg. high aspect ratio **clays**)

IT 1318-93-0, PGV 5, uses
RL: MOA (Modifier or additive use); USES (Uses)
(curable coating compns. contg. high aspect ratio **clays**)

IT 50-21-5, uses
RL: MOA (Modifier or additive use); USES (Uses)
(layered **silicates** treated with; curable coating compns. contg. high aspect ratio **clays**)

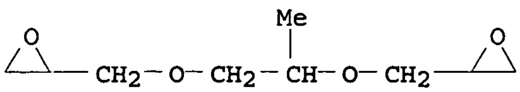
IT 75-13-8D, Isocyanic acid, esters, polymers
RL: MOA (Modifier or additive use); USES (Uses)
(polyisocyanates, crosslinking agents; curable coating compns. contg. high aspect ratio **clays**)

IT **282735-62-0P**
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(curable coating compns. contg. high aspect ratio **clays**)

RN 282735-62-0 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)], (chloromethyl)oxirane and 2,2'-[(1-methyl-1,2-ethanediyl)bis(oxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

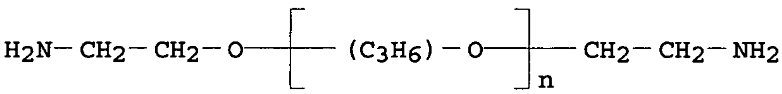
CM 1

CRN 16096-30-3
CMF C9 H16 O4



CM 2

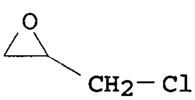
CRN 9046-10-0
CMF (C3 H6 O)n C6 H16 N2 O
CCI IDS, PMS



2 (D1—Me)

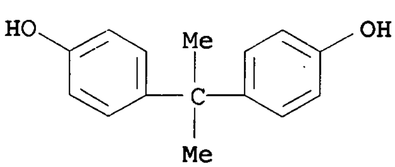
CM 3

CRN 106-89-8
CMF C3 H5 Cl O



CM 4

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 38 OF 51 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:508138 HCAPLUS
DN 133:121730
TI Electrocoating compositions containing high aspect ratio

clays as crater control agents
IN Kaylo, Alan J.; Karabin, Richard F.; Lan, Tie; Sandala, Michael G.
PA PPG Industries Ohio, Inc., USA
SO U.S., 10 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6093298	A	20000725	US 1999-255206	19990222
	CA 2371885	AA	20000824	CA 2000-2371885	20000222
	CA 2371885	C	20050104		
	WO 2000049094	A1	20000824	WO 2000-US4466	20000222

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	EP 1163301	A1	20011219	EP 2000-910277	20000222
	EP 1163301	B1	20041124		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	BR 2000010204	A	20020102	BR 2000-10204	20000222
	JP 2002537437	T2	20021105	JP 2000-599827	20000222
	AT 283320	E	20041215	AT 2000-910277	20000222
	PT 1163301	T	20050331	PT 2000-910277	20000222
	ES 2233341	T3	20050616	ES 2000-910277	20000222
PRAI	US 1999-255206	A	19990222		
	WO 2000-US4466	W	20000222		

AB A cationic electrodepositable compns. exhibiting improved smoothness, cratering and spot contamination resistance comprised of an acidified aq. dispersion of (a) an ungelled cationic resin, (b) a

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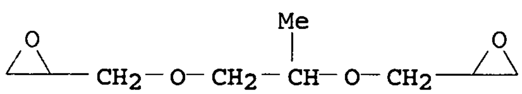
     curing agent, and (c) an exfoliated silicate
     derived from a layered silicate.  Thus, 694.8 parts of a
     cationic epoxy resin with blocked polyisocyanate crosslinker, 133.6
     parts of the aq. dispersion of a cationic epoxy resin formed by the
     reaction of DER 732, Bisphenol A, Jeffamine D 400, Epon 880, lactic
     acid and PGV 5 (montmorillonite) form the electrodepositable compn.
     that can produce an electrocoated film with a crater count of 5/24
     in2, a smoothness of 4-5 µ inches and a oil spot contamination
     resistance of 3-4.
IC   ICM  C25D013-10
INCL 204489000
CC   42-9 (Coatings, Inks, and Related Products)
ST   cationic epoxy resin electrodepositable clay
IT   Electrodeposits
        (electrocoating compns. contg. high aspect ratio clays
        as crater control agents)
IT   Clays, uses
     Kaolin, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (electrocoating compns. contg. high aspect ratio clays
        as crater control agents)
IT   Epoxy resins, uses
     RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical
     or engineered material use); USES (Uses)
        (electrocoating compns. contg. high aspect ratio clays
        as crater control agents)
IT   Coating materials
        (oil-resistant; electrocoating compns. contg. high aspect ratio
        clays as crater control agents)
IT   1343-90-4, Magnesium silicate hydrate
     RL: MOA (Modifier or additive use); USES (Uses)
        (A 5; electrocoating compns. contg. high aspect ratio
        clays as crater control agents)
IT   143-29-3, Mazon 1651
     RL: MOA (Modifier or additive use); USES (Uses)
        (Mazon 1651; electrocoating compns. contg. high aspect ratio
        clays as crater control agents)
IT   1318-93-0, Montmorillonite, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (PGV 5; electrocoating compns. contg. high aspect ratio
        clays as crater control agents)
IT   282735-62-0 282735-63-1
     RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical
     or engineered material use); USES (Uses)
        (electrocoating compns. contg. high aspect ratio clays
        as crater control agents)
IT   50-21-5, uses   64-18-6, Formic acid, uses   64-19-7, Acetic acid,
     uses   144-62-7, Ethanedioic acid, uses   5329-14-6, Sulfamic acid
     RL: MOA (Modifier or additive use); USES (Uses)
        (treated clay; electrocoating compns. contg. high
        aspect ratio clays as crater control agents)
IT   282735-62-0 282735-63-1
     RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical
     or engineered material use); USES (Uses)
        (electrocoating compns. contg. high aspect ratio clays
        as crater control agents)
```

RN 282735-62-0 HCAPLUS
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)], (chloromethyl)oxirane and 2,2'-[(1-methyl-1,2-ethanediyl)bis(oxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

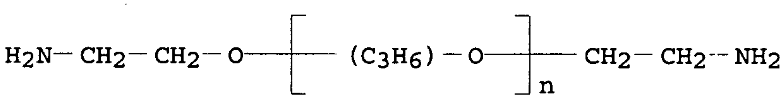
CM 1

CRN 16096-30-3
CMF C9 H16 O4



CM 2

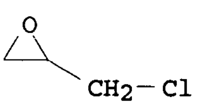
CRN 9046-10-0
CMF (C3 H6 O)n C6 H16 N2 O
CCI IDS, PMS



2 (D1—Me)

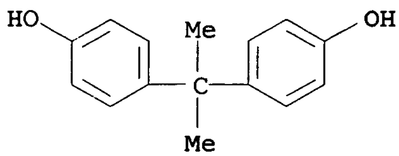
CM 3

CRN 106-89-8
CMF C3 H5 Cl O



CM 4

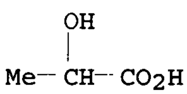
CRN 80-05-7
CMF C15 H16 O2



RN 282735-63-1 HCAPLUS
CN Propanoic acid, 2-hydroxy-, compd. with α-(2-aminomethylethyl)-ω-(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)] polymer with (chloromethyl)oxirane, 2,2'-[(1-methyl-1,2-ethanediyl)bis(oxymethylene)]bis[oxirane] and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 50-21-5
CMF C3 H6 O3

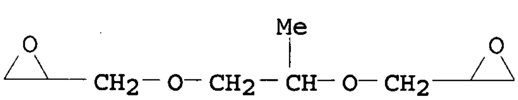


CM 2

CRN 282735-62-0
CMF (C15 H16 O2 . C9 H16 O4 . (C3 H6 O)n C6 H16 N2 O . C3 H5 Cl O)x
CCI PMS

CM 3

CRN 16096-30-3
CMF C9 H16 O4



CM 4

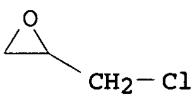
CRN 9046-10-0
CMF (C3 H6 O)n C6 H16 N2 O
CCI IDS, PMS

$H_2N-CH_2-CH_2-O-[(C_3H_6)-O]_n-CH_2-CH_2-NH_2$

2 (D1—Me)

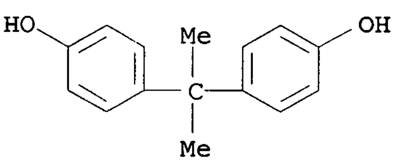
CM 5

CRN 106-89-8
CMF C3 H5 Cl O



CM 6

CRN 80-05-7
CMF C15 H16 O2



RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

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     FILE 'REGISTRY' ENTERED AT 13:12:14 ON 11 OCT 2005
                D SAV
                ACT VRONESI213/A
                ---------
L1              SCR 2043
L2              STR
L3              STR
L4              STR
L5              STR
L6         2761 SEA SSS FUL L1 AND L2 AND (L3 OR L4) AND L5
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     FILE 'HCAPLUS' ENTERED AT 13:13:07 ON 11 OCT 2005
L7         3410 SEA L6

     FILE 'REGISTRY' ENTERED AT 13:13:52 ON 11 OCT 2005
L8            2 SEA L6 AND 1/NC
                D SCAN

     FILE 'HCAPLUS' ENTERED AT 13:16:53 ON 11 OCT 2005
L9            3 SEA L8
                D SCAN
L10          71 SEA L7 AND (FOLIAT? OR EXFOLIAT? OR INTERCALAT? OR
                EXPAND(2A)LAYER?)
L11         162 SEA L7 AND (?SILICATE? OR ?CLAY?)
L12          51 SEA L10 AND L11
                D AN L12 1-51

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     FILE 'HCAPLUS' ENTERED AT 13:43:43 ON 11 OCT 2005
                SET COST OFF

     FILE 'REGISTRY' ENTERED AT 13:44:25 ON 11 OCT 2005

     FILE 'HCAPLUS' ENTERED AT 13:44:30 ON 11 OCT 2005
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                D COST

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     FILE 'HCAPLUS' ENTERED AT 13:49:20 ON 11 OCT 2005
                D L9 AN 1-3

     FILE 'STNGUIDE' ENTERED AT 13:50:16 ON 11 OCT 2005


     FILE HOME

     FILE REGISTRY
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Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 10 OCT 2005 HIGHEST RN 864908-12-3
DICTIONARY FILE UPDATES: 10 OCT 2005 HIGHEST RN 864908-12-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2005

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

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*******************************************************************
*
* The CA roles and document type information have been removed from
* the IDE default display format and the ED field has been added,
* effective March 20, 2005.  A new display format, IDERL, is now
* available and contains the CA role and document type information.
*
*******************************************************************
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Structure search iteration limits have been increased. See HELP SLI
for details.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document. For informatio
on property searching in REGISTRY, refer to:

http://www.cas.org/ONLINE/UG/regprops.html

FILE HCAPLUS

FILE COVERS 1907 - 11 Oct 2005 VOL 143 ISS 16
FILE LAST UPDATED: 10 Oct 2005 (20051010/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

FILE STNGUIDE
FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Oct 7, 2005 (20051007/UP).

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=> d l9 bib abs ind hitstr 1-3
YOU HAVE REQUESTED DATA FROM FILE 'HCAPLUS' - CONTINUE? (Y)/N:y


L9   ANSWER 1 OF 3  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   1998:599873  HCAPLUS
DN   129:308531
TI   Ink-jet printing sheet coated with amino group-containing resin
     particles
IN   Moronuki, Katsuki; Ono, Emiko; Hiraki, Noriko; Nakamura, Yoshiaki;
     Asakage, Hideyasu
PA   Oji Paper Co., Ltd., Japan; Toto Kasei K. K.
SO   Jpn. Kokai Tokkyo Koho, 13 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------
     --------
PI   JP 10244749          A2    19980914    JP 1997-69135
                                                                   199703
                                                                   06
PRAI JP 1997-69135              19970306
AB   The sheet comprises a support coated with an ink-receiving layer
     contg. fine particles (av. particle size 0.05-10 μm) of an amino
     group-contg. water-insol. resin (amine value 5-500 mg/KOH) formed by
     emulsion dispersion.  The ink-receiving layer may be heat-sealable
     with the other side of the sheet.  The sheet shows good ink
     fixability and gives clear images with good water resistance and
     lightfastness.
IC   ICM  B41M005-00
     ICS  B05D005-04; B32B005-16; B32B027-00; B32B027-38; C08J007-04
CC   74-6 (Radiation Chemistry, Photochemistry, and Photographic and
     Other Reprographic Processes)
ST   ink jet printing sheet; amino epoxy resin particle printing sheet
IT   Epoxy resins, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (amino-contg.; ink-jet printing paper contg. amino group-contg.
        resin particles)
IT   Ink-jet recording sheets
        (paper; ink-jet printing paper contg. amino group-contg. resin
        particles)
IT   Paper
        (printing, ink-jet; ink-jet printing paper contg. amino
        group-contg. resin particles)
IT   214482-85-6
     RL: TEM (Technical or engineered material use); USES (Uses)
        (ink-jet printing paper contg. amino group-contg. resin
        particles)
IT   206275-11-8
     RL: TEM (Technical or engineered material use); USES (Uses)
        (sink-jet printing paper contg. amino group-contg. resin
        particles)
IT   206275-11-8
```
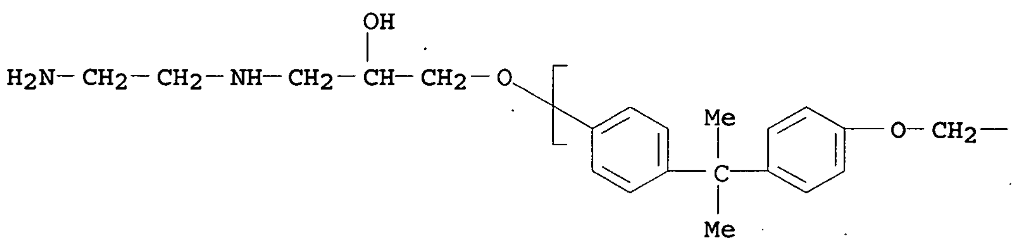

RL: TEM (Technical or engineered material use); USES (Uses)
(sink-jet printing paper contg. amino group-contg. resin particles)

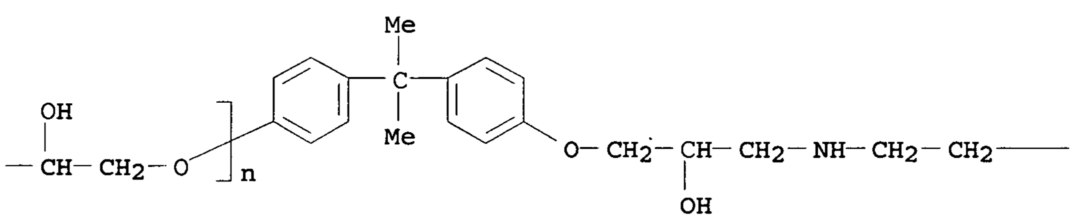
RN 206275-11-8 HCAPLUS

CN Poly[oxy(2-hydroxy-1,3-propanediyl)oxy-1,4-phenylene(1-methylethylidene)-1,4-phenylene], α-[4-[1-[4-[3-[(2-aminoethyl)amino]-2-hydroxypropoxy]phenyl]-1-methylethyl]phenyl]-ω-[3-[(2-aminoethyl)amino]-2-hydroxypropoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



PAGE 1-C

L9 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1998:242233 HCAPLUS

DN 128:302124

TI Ink-jet printing sheet with improved ink-fixability

IN Moronuki, Katumi; Hiraki, Motoko; Nakamura, Yoshiaki; Asakage, Hideyasu

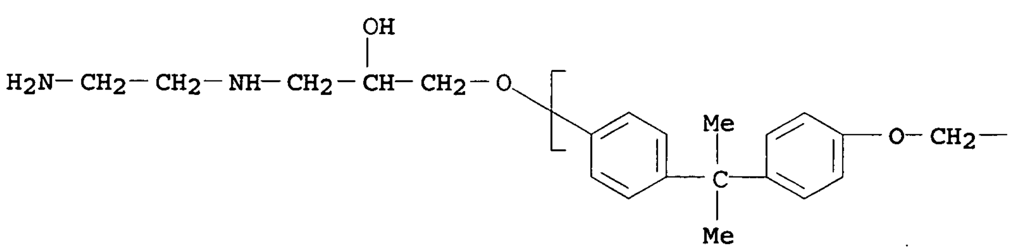
PA Oji Paper Co., Ltd., Japan; Tohto Kasei Co., Ltd.

SO Ger. Offen., 24 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19744625	A1	19980416	DE 1997-19744625	19971009
	JP 10166720	A2	19980623	JP 1996-354040	19961218
PRAI	JP 1996-287501	A	19961009		

AB In the title sheet comprising a support sheet and an ink-receptor layer comprised of a binder and fine particles of water-insol., amino-group-contg. resins with an amino total no. of 5-500 and preferably showing a Tg of 15-250°.
IC ICM B41M005-00
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST ink jet printing sheet amino resin
IT Ink-jet recording sheets
(ink-jet printing sheet with improved ink-fixability)
IT 9002-89-5, Poval PVA 105 100359-21-5, Oji Ace A 115471-08-4, R 1130 199015-73-1, SE 2005 206275-10-7 **206275-11-8**
RL: DEV (Device component use); USES (Uses)
(ink-jet printing sheet with improved ink-fixability)
IT **206275-11-8**
RL: DEV (Device component use); USES (Uses)
(ink-jet printing sheet with improved ink-fixability)
RN 206275-11-8 HCAPLUS
CN Poly[oxy(2-hydroxy-1,3-propanediyl)oxy-1,4-phenylene(1-methylethylidene)-1,4-phenylene], α-[4-[1-[4-[3-[(2-aminoethyl)amino]-2-hydroxypropoxy]phenyl]-1-methylethyl]phenyl]-ω-[3-[(2-aminoethyl)amino]-2-hydroxypropoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



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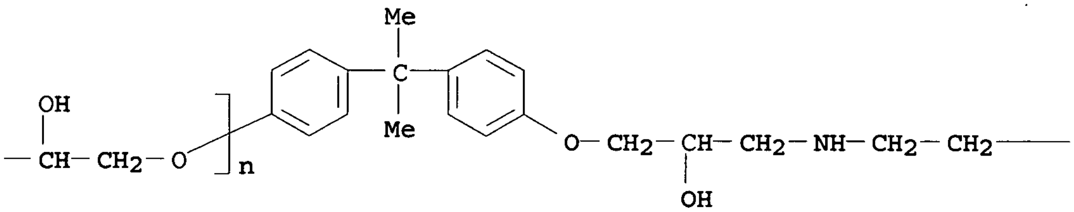


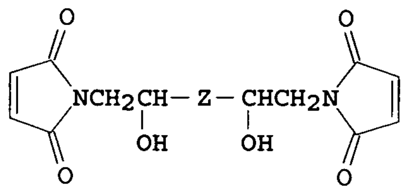
PAGE 1-C

— NH_2

L9 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1988:151119 HCAPLUS
DN 108:151119
TI Polymaleimides with good curability and processability
IN Otsuka, Masahiko; Ishimura, Shuichi
PA Asahi Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62205059	A2	19870909	JP 1986-46432	19860305
	JP 07030021	B4	19950405		
	US 4761460	A	19880802	US 1987-21886	19870304
	EP 241133	A2	19871014	EP 1987-301901	19870305
	EP 241133	A3	19881214		
	EP 241133	B1	19940803		
	R: CH, DE, FR, GB, IT, LI, NL				
PRAI	JP 1986-46432	A	19860305		

GI



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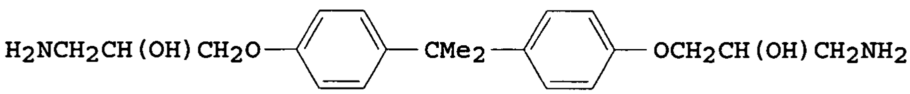

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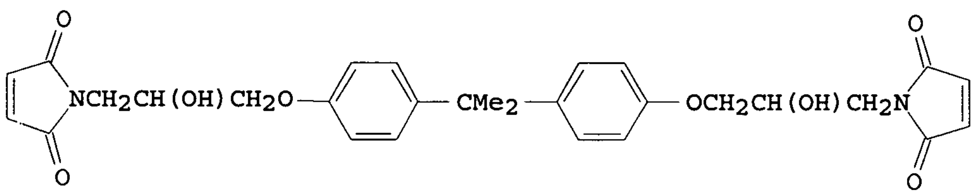


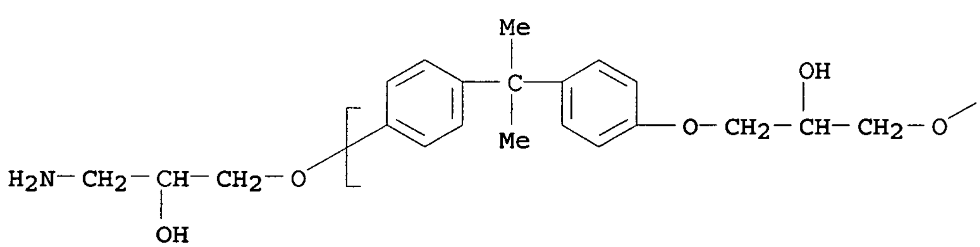
III

AB Polymaleimides Z[CH(OH)CH2Q]2 (Z = polyvalent org. group; Q = maleimido) are sol. in low-boiling solvents and can be cured with compds. having active H or conjugated double bonds, or using radical initiators, to obtain polyimides with good heat resistance and adhesion to substrates, and low thermal expansion. Thus, 187 parts Me2C[C6H4OCH2CH(OH)CH2NH2-p]2 was treated with 98 parts maleic anhydride in THF at 25°, then with AcONa and Ac2O at 60° for 3 h to give Me2C[C6H4OCH2CH(OH)CH2Q-p]2 (I) with softening temp. 125-130°. When 100 parts I was mixed with 19 parts CH2(C6H4NH2)2 and cured at 200° for 4 h, the product showed glass transition temp. 250°, linear thermal expansion coeff. 87 ppm/°C, and shear bonding strength (JIS K 6850 test) 100 kg/cm2.

IC ICM C07D207-452
ICS C07D403-14
ICA C08F022-40
ICI C07D403-14, C07D207-00, C07D233-00
CC 35-2 (Chemistry of Synthetic High Polymers)
ST polymaleimide curable soluble heat resistant
IT Heat-resistant materials
(polyimides, polymaleimide-based, with good bonding strength)
IT Polyimides, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(maleimido-contg., manuf. of, heat-resistant, with good bonding strength)
IT 113601-71-1P 113602-16-7P 113683-61-7P 113683-62-8P
113683-63-9P 113683-64-0P 113683-65-1P
RL: PREP (Preparation)
(manuf. of sol., curable)
IT 113601-72-2P

RL: IMF (Industrial manufacture); PREP (Preparation)
(manuf. of, heat-resistant, with good bonding strength)
IT 108-31-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with diamines)
IT 53799-07-8 105511-23-7 **113602-15-6** 113683-57-1
113683-58-2 113683-59-3 113683-60-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with maleic anhydride)
IT **113602-15-6**
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with maleic anhydride)
RN 113602-15-6 HCAPLUS
CN Poly[oxy(2-hydroxy-1,3-propanediyl)oxy-1,4-phenylene(1-methylethylidene)-1,4-phenylene], α-[4-[1-[4-(3-amino-2-hydroxypropoxy)phenyl]-1-methylethyl]phenyl]-ω-(3-amino-2-hydroxypropoxy)- (9CI) (CA INDEX NAME)

PAGE 1-A



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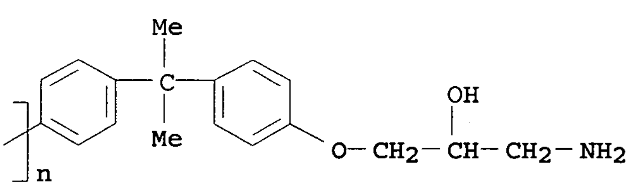

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